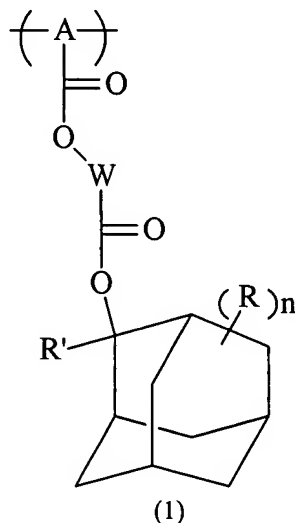


Claims

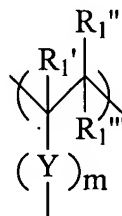
1. A photoresist composition comprising a photoacid generator and a polymer comprising at least one unit as described by structure 1,



where, A is a unit derived from an aliphatic unsaturated moiety, W is a nonaromatic linking group, R is independently selected from substituted hydrocarbyl group, unsubstituted hydrocarbyl group, hydrogen, hydroxyl, and (C₁-C₁₀)alkyl, R' is hydrogen or (C₁-C₆) alkyl, and n=1-9.

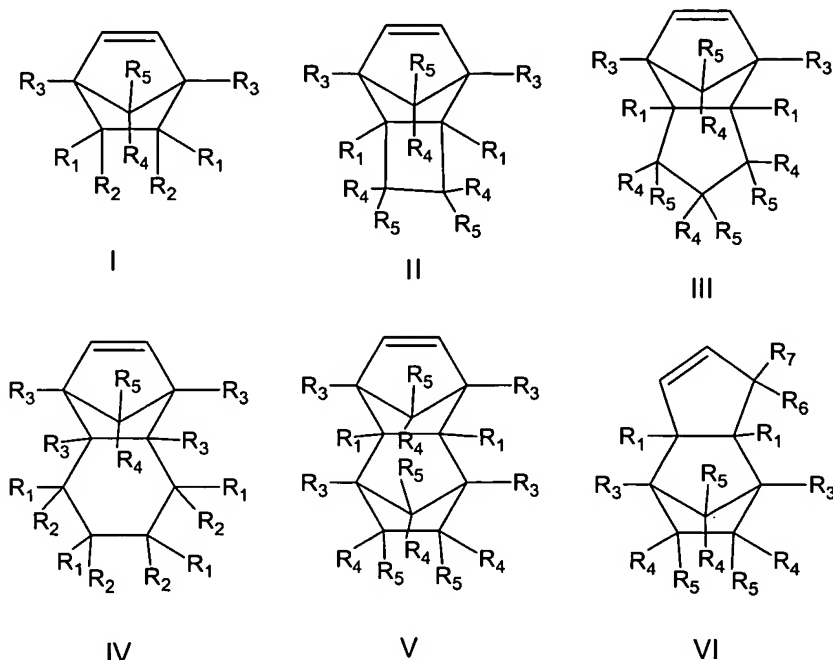
2. The composition according to claim 1, where A is a cyclic unit selected from an aliphatic multicyclic unit and an aliphatic monocyclic unit.

3. The composition according to claim 1, where A has the structure



where R₁' ,R₁'' and R₁''' are independently hydrogen, (C₁-C₆) alkyl or cyano, and Y is X, C(O)OX, OX, where X is selected from a group of a 5 to 8 membered monocyclic group, 6 to 20 membered multicyclic group and an aliphatic (C₁-C₆) alkylene group, and m is 0 or 1.

4. The composition according to claim 2, where the unit of structure 1 is selected from those derived from the following monomers,



5 where, in the above structures, R_1 - R_7 are independently H, F, (C1-C8)alkyl, (C1-C8)fluoroalkyl, and at least one of R_1 - R_6 forms the unit described in structure 1 according to claim 1.

5. The composition according to claim 1, where the aliphatic cyclic unit is a monocyclic unit.

6. The composition according to claim 1, where W is selected from an alkyl and a cycloalkyl group.

7. The composition according to claim 1, where W is selected from a (C₁-C₈) linear alkyl, (C₁-C₈) branched alkyl, substituted monocycloalkyl, unsubstituted monocycloalkyl, substituted multicycloalkyl and unsubstituted multicycloalkyl.

8. The composition according to claim 1, where the polymer further comprises at least one comonomeric unit.

9. The composition according to claim 8, where the comonomeric unit is derived from monomers selected from cyclic anhydrides, (meth)acrylate esters, vinyl acetals and cyclo olefins.

5 10. The process of imaging a positive photoresist composition comprising the steps of:

- a) coating a substrate with a film of photoresist composition of claim 1;
- b) baking the substrate to substantially remove the solvent;
- 10 c) imagewise irradiating the photoresist film;
- d) baking the photoresist film; and,
- e) developing the irradiated photoresist film using an alkali developer.

15 11. The photoresist composition according to claim 10, further comprising coating an antireflective film on the substrate prior to coating the photoresist.

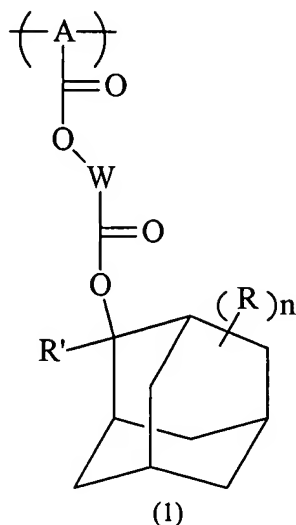
20 12. The photoresist composition according to claim 10, further where the antireflective coating is sensitive at 193nm.

13. The process of claim 10, wherein the photoresist film is imagewise irradiated with light of wavelength in the range of 100nm to 300nm.

25 14. The process of claim 10, wherein the heating in step d) ranges from a temperature of from about 90°C to about 150°C for from about 30 seconds to about 180 seconds on a hot plate.

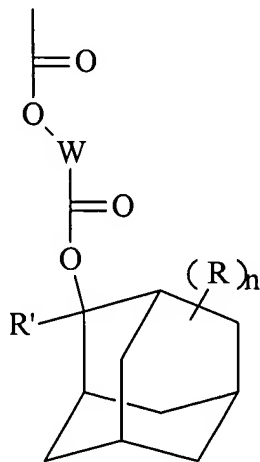
30 15. The process of claim 10, wherein the alkali developer comprises an aqueous solution of tetramethyl ammonium hydroxide.

16. A polymer comprising at least one unit as described by structure 1,



- where, A is a unit derived from an aliphatic unsaturated moiety, W is a nonaromatic linking group, R is independently selected from substituted hydrocarbyl group, unsubstituted hydrocarbyl group, hydrogen, hydroxyl, and (C₁-C₁₀)alkyl, R' is hydrogen or (C₁-C₆) alkyl, and n=1-9.

17. A monomer comprising an aliphatic unsaturated moiety with a pendant structure



- where, W is a nonaromatic linking group, R is independently selected from substituted hydrocarbyl group, unsubstituted hydrocarbyl group, hydrogen, hydroxyl, and (C₁-C₁₀)alkyl, R' is hydrogen or (C₁-C₆) alkyl, and n=1-9.